

AMENDMENTS TO THE TITLE AND SPECIFICATION

In The Title:

Please amend the Title as follows:

A PLASMA PROCESSING APPARATUS ~~AND PLASMA PROCESSING~~
METHOD

In The Specification:

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Before the heading "BACKGROUND OF THE INVENTION," please insert the following heading and paragraph:

"CROSS-REFERENCE TO RELATED APPLICATIONS"

This application is a Continuation application of Serial No. 10/052,538, filed January 23, 2002, which is Divisional of application Serial No. 09/565,536, filed May 5, 2000; which is a Continuation of Serial No. 08/808,805, filed February 28, 1997, the entire disclosure of which is hereby incorporated by reference.

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Please replace Paragraph 3, starting on line 19 and bridging page 64 with the following new paragraph:

As described above, in order to improve micro workability of a sample, it is preferable that a plasma generating high frequency electric power source 16 has a higher frequency and discharge under a low gas pressure is stabilized. In the embodiment of the present invention, the pressure processing a sample in the

processing chamber is set to 0.5 to 4.0 Pa. By setting the gas pressure in the processing chamber 10 to a low pressure below 4.0 Pa, probability of ion collision in the sheath is decreased. Therefore, in processing a sample 40, directivity of ions is increased and accordingly it becomes possible to perform vertical fine pattern. However, in order to attain the same processing rate under a pressure below 0.5 Pa, the exhausting system and the high frequency electric power source become large in size, and dissociation of the processing gas occurs excessively due to increase of electron temperature, as a result, the processing characteristic is likely to be degraded.

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Please amend the first full paragraph beginning on line 8 as follow:

In general, between a frequency of a plasma generating electric power source for a pair of electrodes and a minimum gas pressure capable of stably discharging, there is relationship that the lowest gas pressure for stable discharge is decreased as the frequency of the electric power source is increased and the distance between the electrodes is increased. In order to avoid ill effects such as attaching of deposits onto surrounding walls and onto the discharge confining ring 37 and to effectively perform a function of removing fluorine or oxygen by the upper electrode cover 30, the susceptible cover 39 and the resist in the sample, it is preferable that the distance between the electrodes is set to a value shorter than 50 mm which corresponds to a distance smaller than 25 times of mean-free-path at the maximum gas pressure of 40 mTorr. On the other hand, in order to attain stable discharge, the distance between the electrodeelectrodes is required to be 2 to 4

times (4 mm to 8 mm) or larger of the mean-free-path at the maximum gas pressure (~~40 mTorr~~) 4.0 Pa. Thus, a range of 8 mm to 50 mm is a preferred range in terms of maintaining a stable discharge while effectively removing fluorine and avoiding deposits on the walls of the apparatus.